UBER SUPPLY DEMAND ANALYSIS

Abstract

- Uber is facing - driver cancellation and non-availability of cars which leads to loss of potential revenue.
- **Business Objective:** The aim of analysis is to identify the root cause of the problem (i.e. cancellation and non-availability of cars) and recommend ways to improve the situation.
- **Business Goals:**
  - Visually identify the most pressing problems for Uber.

    Create plots to visualise the frequency of requests that get cancelled or show 'no cars available'; identify the most problematic types of requests (city to airport / airport to city etc.) and the time slots (early mornings, late evenings etc.) using plots
  - Find out the gap between supply and demand and show the same using plots.
  - Find the time slots when the highest gap exists
  - Find the types of requests (city-airport or airport-city) for which the gap is the most severe in the identified time slots
  - Recommend some ways to resolve the supply-demand gap.

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Problem solving methodology

Data Collection

- Uber request data of trips from City to Airport and visa versa
- This row data is then imported into system using python

Data Inspection & Cleanup

- There are total 6 columns in the row data and inspection has been done on Request Timestamp, Drop Timestamp, Status and Pickup point .
- Need to change the Request and Drop timestamp columns into Proper data format in data cleaning.

Data Analysis

- We have done 3 type of analysis:
  - Gaps between total Supply- Demand of Uber data and the Frequency of requests
  - Analysis on the different timeslots where highest gaps exists.
  - Types of request in different timeslots where gap is most serve

Data Visualization

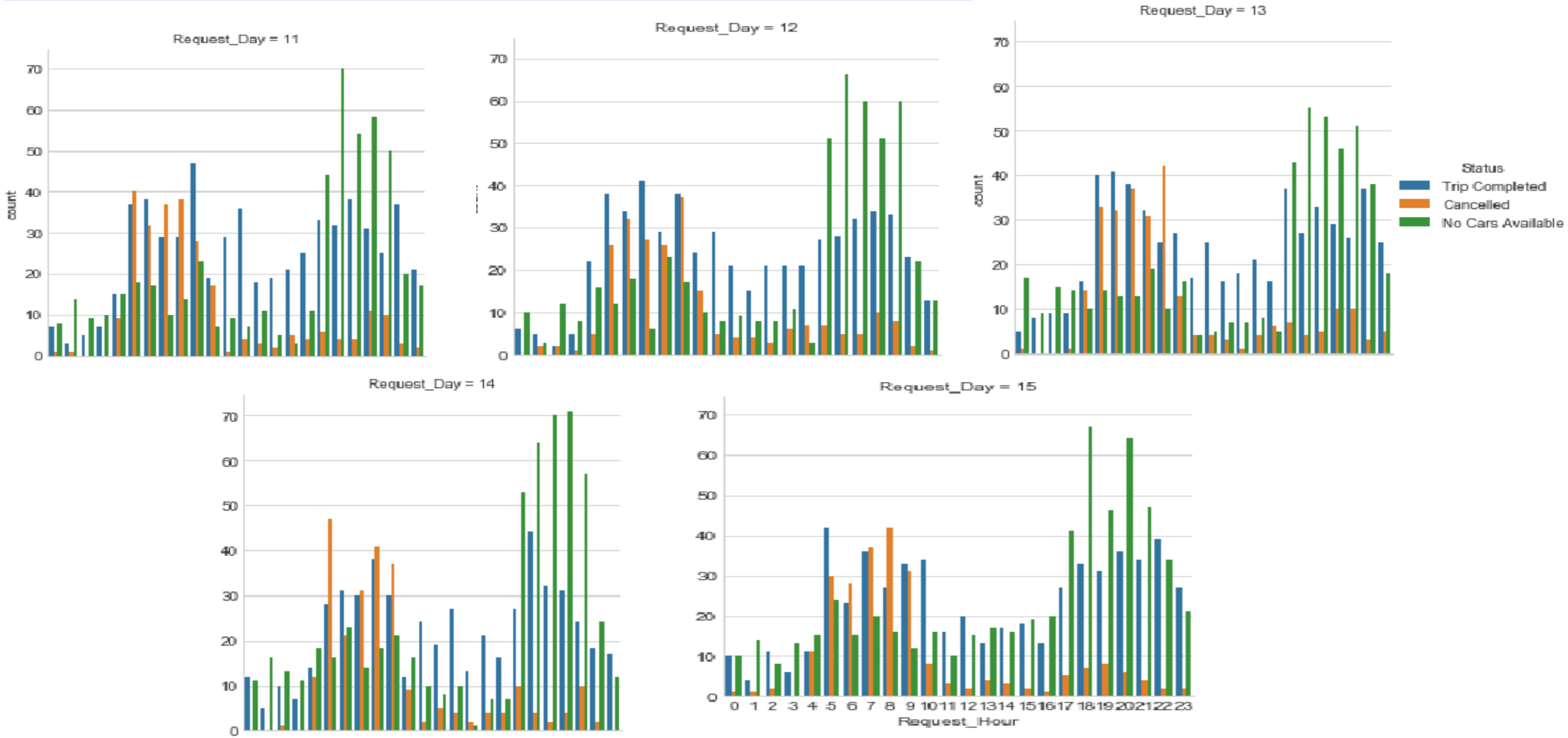
- All three types of analysis have been visualized using Python libraries such as seaborn, matplotlib.
- These helps to powerful representation of analysis using Countplots, Factorplots and Pie-charts

Data Summary

- Final observation summary have been captured in Tableau for effective demonstration.

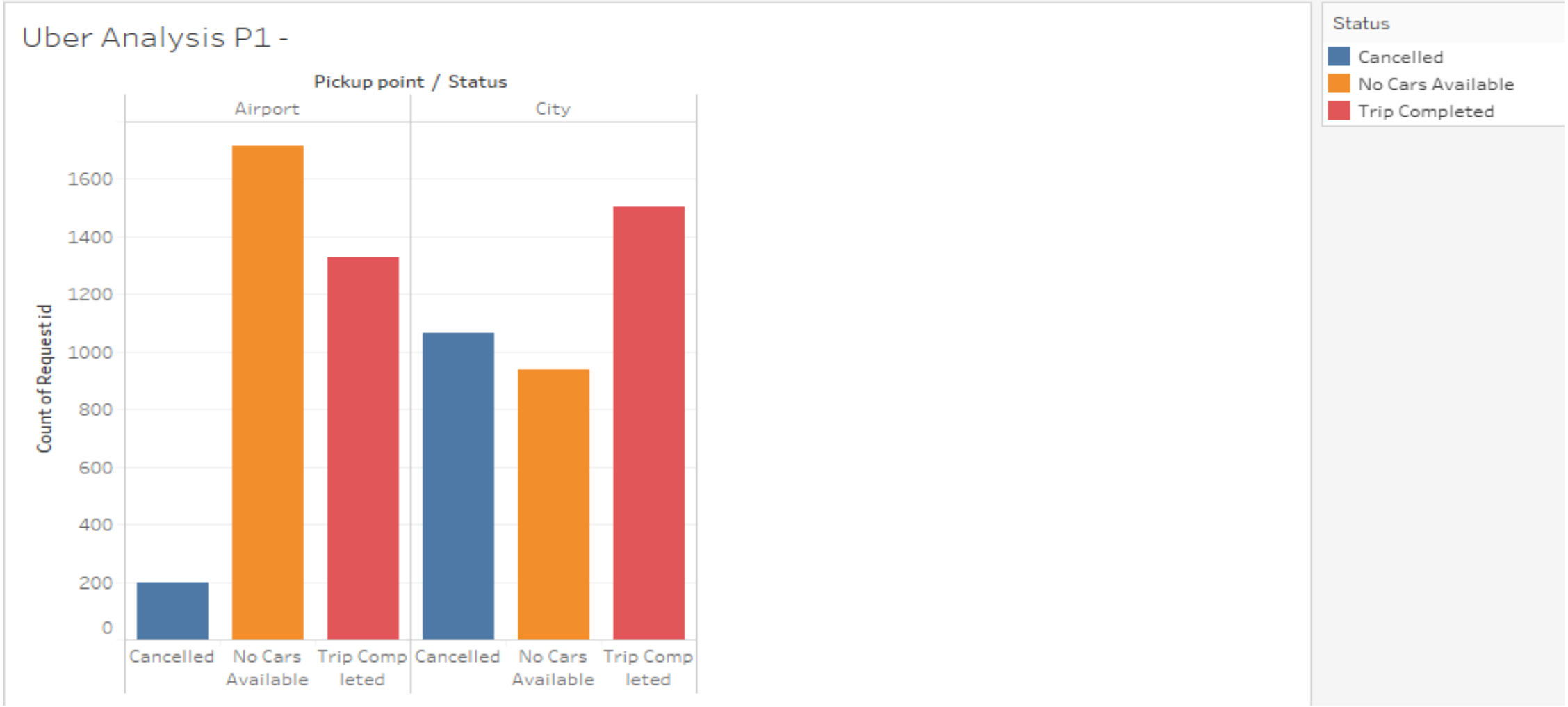
Analysis of Request

Day wise Analysis- These shows different patterns of requests on each day.



Analysis of Problem on Status

Status of Rides- from its pick up points: It can be clearly observed that from Airport pickup Car availability is less where as from City trip cancellation is much higher.



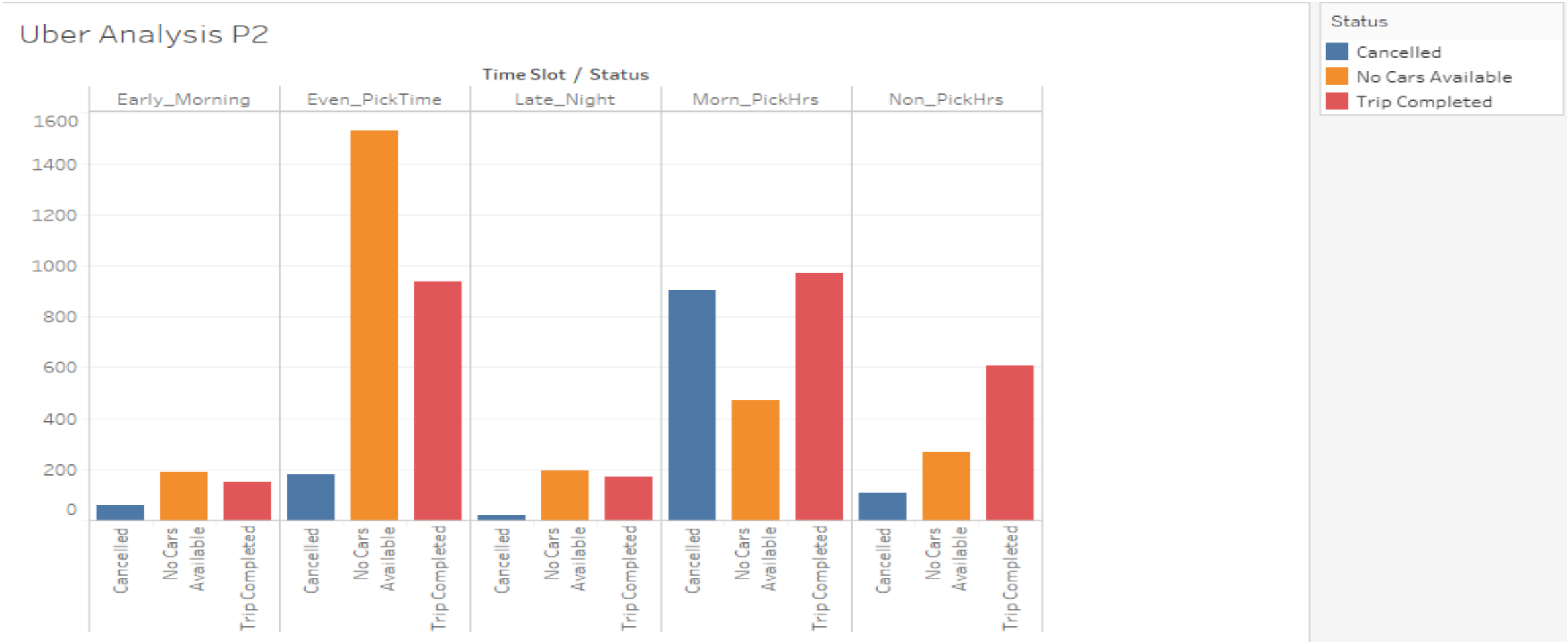
Analysis (Time Slots)

- Total data is divided into different time slots,

Time Slots	Duration	Total Trips
Early Morning	2 AM to 5 AM	394
Morning Peak Hours	5 AM to 11 AM	2346
Non Peak Hours	11 AM to 5 PM	981
Evening Peak Hours	5 PM to 11 PM	2646
Late Night	11 PM to 2 AM	378

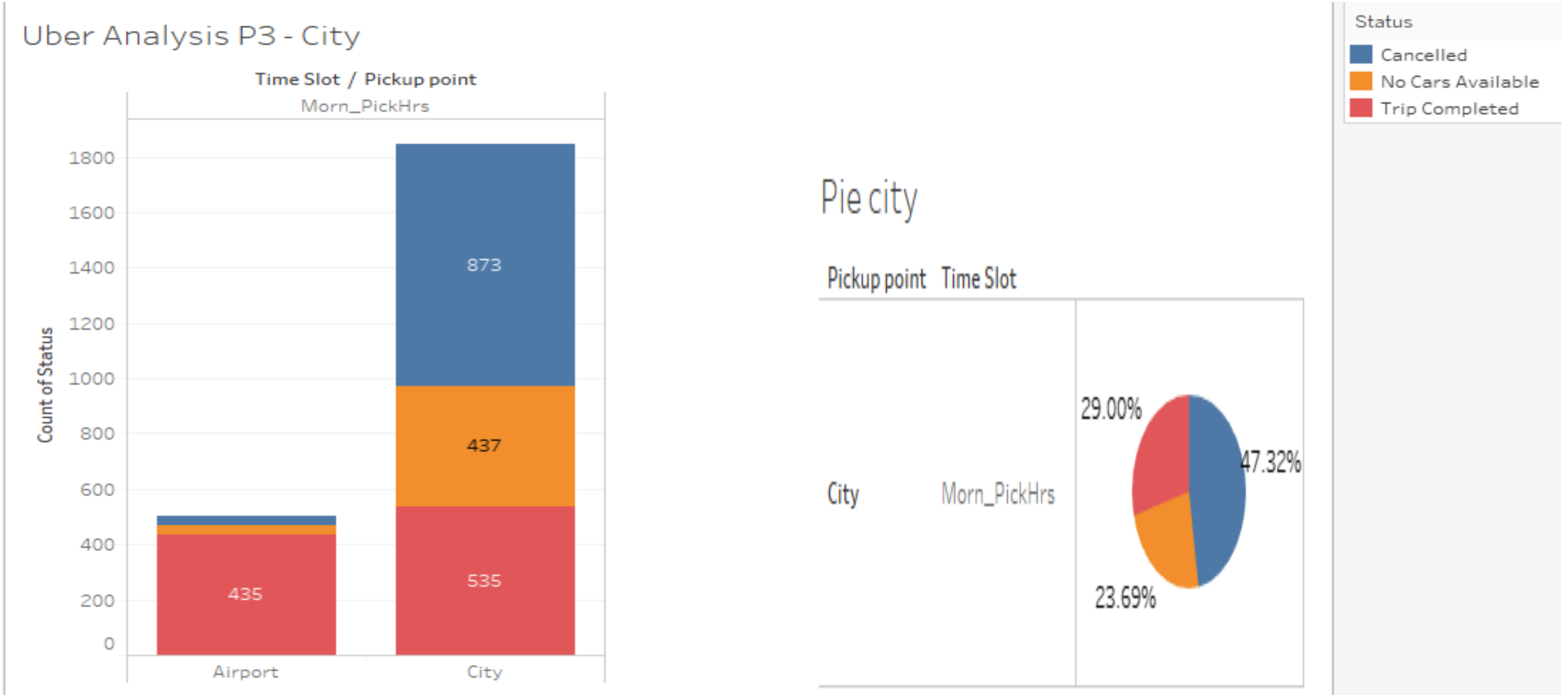
Analysis based on Time Slots

This analysis is to find the most Supply – Demand gaps in different time slots based on ride status. It clearly shows the Evening Peak slot where supply is less and Morning Peaks where Cancellation is high.



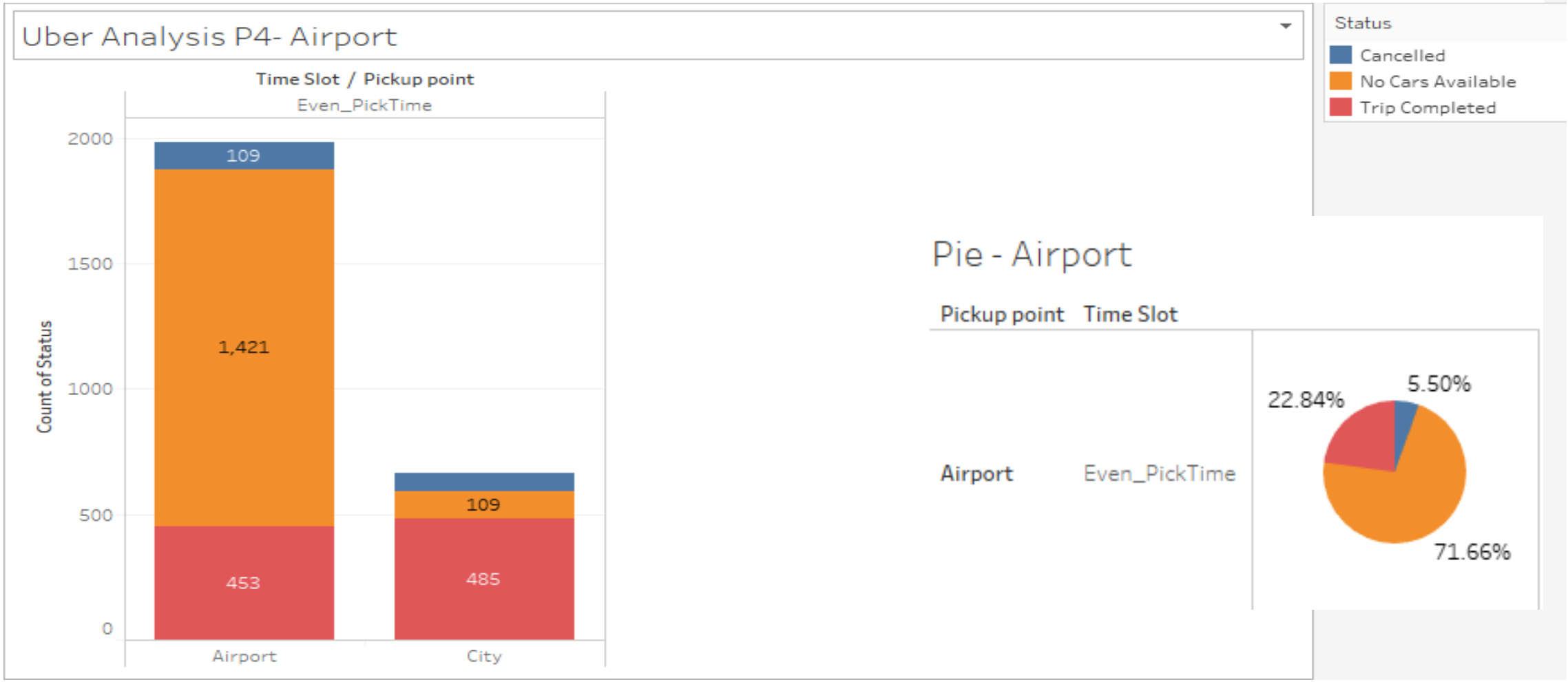
City Analysis on Car Cancellations

The Total trips from city are 873+437+535 = 1845 i.e Around 47% of trips cancelled in Morning Peak hours.



Airport Analysis on Car's Unavailability

The Total trips from airport are 109+1421+453 = 1983 i.e Around 72% of trips failing to fulfill the demand.



Conclusions

- 'Non availability' of cars in Morning peak time is very high where as car 'Cancellation' is very high in the Evening peak times.
- Non availability of car is one of the factors for Bookings to the Airport falling short of the Demand.
- Cancelled bookings from City which in turns to leads to loss of potential revenue.
- Here is the short summary,

Pick Points	City			Airport		
Status/Time Slots	Completed	Not Available	Cancelled	Completed	Not Available	Cancelled
Early Morning	82	98	56	67	89	2
Morning Peak Hours	535	437	873	435	34	32
Non Peak Hours	331	195	51	274	74	55
Evening Peak Hours	485	109	69	453	1421	109
Late Night	70	98	17	98	95	0

Recommendation

Here are some recommendation for the rides in the morning,

I. Uber can increase the demand at the airport to reduce idle time and price discounts for the passengers.

II. Driver could be given a good pay for each trip they complete from the city to the airport in the morning peak times. This will ensure that less number of trips are cancelled.

III. Uber can give minimum amount to the drivers to come back to the city without a ride.

Here are some recommendation for the rides in the evening,

I. Drivers can again be given a bonus to complete a trip from the airport in the evening. This will ensure that the supply increases at the airport.

II. Other way can be to pool the rides of passengers so that lesser number of cars can serve more passengers also giving some added discounts on pools.